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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,800	03/30/2004	Rick C. Stevens	5801EA253	6037

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EXAMINER	
DUPUIS, DEREK L	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,800	STEVENS, RICK C.	
	Examiner	Art Unit	
	Derek L. Dupuis	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 10/31/2005 have been fully considered but they are not persuasive.

3. In response the applicants arguments on pages 2 and 3 that the fibers do not rotate, as pointed out in the office action mailed 7/28/2005, the examiner understands that a ferrule and a fiber are not the same thing. However, the examiner has stated that the ferrule *contains* the fiber since as is well known and routinely practiced by those in the art, that a ferrule holds a fiber. Thus, as the ferrule rotates, so does the fiber that it holds.

4. The examiner also respectfully disagrees with the applicants argument on pages 3 and 4 that Takahashi does not teach that an optical signal is transferred between the first optical fiber and the further optical fiber while permitting rotation thereof. Takahashi teaches that the fibers are connected to a power source and a power meter (see column 5, lines 56-59) and that the fibers are rotated to produce a desired level of attenuation (see column 5, line 60 to column 6, line 4). Once the desired level of attenuation is set, the adhesive is poured and the fibers are "locked" into place (see column 6, lines 1-4). However, as clearly stated by Takahashi, an

optical signal from a power source is coupled between the fibers and is passed into a power meter while the fiber is rotated. Only ***after*** the desired amount of attenuation is achieved is the system "locked" into a set configuration.

5. Applicants argument that the fiber ends are not "proximate each other" as stated on page 4, the examiner respectfully disagrees. As stated above, the ferrules are used to hold optical fibers. As such, when the ferrules are located with ends proximate one another, the ends of the fibers are also held proximate one another since the fibers are held in the ferrule.

6. In regard to the applicants arguments on pages 4 and 5 that the fibers are not angle cut, the examiner respectfully disagrees. As taught by Takahashi the ferrule edge surfaces are cut at an angle (see column 6, lines 15-37). As stated above and in the office action mailed 7/28/2005, the fibers are located inside of the ferrules. A ferrule holds a fiber in its center bore. The fiber is inserted into a ferrule and the fiber extends through the ferrule and terminates at the end face of the ferrule. The end of the fiber is generally flush with the end face of the ferrule. When the ferrule end face is polished or cut, the fiber also undergoes the same treatment since the end face of the fiber is in the same plane as the end face of the ferrule. While this is not explicitly stated in the reference, this is understood because it is commonly known and routinely used in the art of optical fibers.

7. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "rotating about the first ferrule" see middle paragraph page 6) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification

are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Takahashi teaches a rotational joint located on the first fiber as claimed by applicant.

8. Regarding the arguments on pages 6 and 7, the examiner disagrees with the argument that the reference does not teach an alignment sleeve. The adapter (59) is used to align the ferrules which hold the fibers. Therefore, the adapater (59) meets the limitations set forth in the claim of "holding the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber in rotational alignment with respect to each other".

9. With regard to the arguments on page 7, the examiner respectfully disagrees with the applicants argument that the reference does not teach " a rotational butt coupled joined in an optical lead". In the office action mailed 7/28/2005, the examiner pointed out that this limitation was met by item 41a which is butt coupled to ferrule 41b and ferrule 42a and is rotational. Applicant argues that the fiber in ferrule 41a rotates around an optical axis of the first ferrule rather than the first ferrule itself. However, the limitation is not claimed.

10. The Takahashi reference discloses and renders obvious all of the limitations of the claimed invention. The rejection set forth in the office action dated 7/28/2005 has been maintained and is repeated below.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-13, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681.

Regarding independent claim 1 as claimed, Takabashi teaches an optical coupler (Fig 3, ref sign 31) comprising a first optical fiber (Fig 3, ref sign 41b) and a further optical fiber (Fig 1, ref sign 41a) rotatably mounted with respect to the first optical fiber (col 5, lines 1-4) with an end of the first optical fiber (Fig 1, refs sign 41b-right end) positioned proximate an end of the further optical fiber (Fig 1, ref sign 41a-left end) to permit transfer of an optical signal between the first optical fiber and the further optical fiber (col 4, lines 44-48) while permitting rotation thereof (col 5, lines 1-4).

While the reference does not specifically show the first fiber end proximate the further fiber end, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above. Please see response to arguments regarding fiber in ferrule.

Regarding independent claim 11 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling comprising a first optical fiber having an angle cut terminus (Fig 3, ref sign 41a and ref sign 36), a rotational joint located on the first optical fiber (col 5, lines 1-4 and Fig 3, ref sign 31); a second optical fiber having an angle cut terminus (Fig 3, ref sign 42a and ref sign 35) with the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber positionable in optically transmittable condition with each other to minimize back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and an alignment sleeve (col 4, lines 56-58 and Fig 3, ref sign 59) for holding the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber in rotational alignment with respect to each to each other.

The rotational joint allows the ferrule 41b to rotate about the ferrule 41 and results from the holder 51 keeping the ferrule 41b adjacent ferrule 41a.

While the reference does not specifically show first and second fibers having an angle cut terminus, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers) have angle cut terminus'.

Regarding independent claim 16 as claimed, Takabashi teaches a method of twist free optical coupling comprising: forming a rotational butt coupled joint in an optical lead having a terminus (Fig 3, ref sign 41a, left end); forming a coupling angle cut face on the terminus of the optical lead (Fig 3, ref sign 41a and 36); forming a mating coupling angle cut face on the terminus of another optical lead (Fig 3, ref sign 42a and 35); and rotationally aligning the coupling angle cut face of the optical lead with the mating coupling angle cut face to thereby transmit an optical signal therebetween (col 4, lines 44-48) while minimizing back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and twisting of the optical lead (col 5, lines 1-5 since the ferrule 41b can rotate).

While the reference does not specifically state or show a butt coupled joint in an optical lead or an angle cut face in an optical lead, fibers/optical leads are implied to be in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers/leads) have angle cut faces and are butted up against other ferrules/fibers.

Regarding claims 3, 5, 12,18 and 19, there is an alignment sleeve mounted on the coupler (col 4, lines 56-58 and Fig 3, refs sign 59) with an alignment guide (Fig 3, ref sign 55 and 56 where the threads used as guides).

Regarding claims 4 and 20, there is a second optical coupler with a rotational joint mounted in the alignment sleeve (Fig 3, refs sign 32).

Regarding claim 6, there is a flanged member (Fig 3, refs sign 51 and 45) holding the first optical fiber and a rotatable member comprising a further flanged member holding the further optical fiber (Fig 3, ref sign 59).

Regarding claim 7, a U-shaped member holds the flanged member and the further flanged member in rotational engagement with each other (Fig 3, ref sign 57).

Regarding claim 8 and 10, at least one of the optical fibers or the further optical fiber includes an angle cut face (Fig 3, ref sign 36). While the reference does not specifically show a fiber having an angle cut terminus, fibers are implied to be in the ferrule 41a to permit light transmission described above and the ferrule has an angle cut face.

Regarding claim 9, the end of the first optical fiber and the end of the further optical fiber form a butt connection (Fig 3, ref sign 41b-right end and 41a-left end). While the reference does not specifically state "form a butt connection", these types of connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Regarding claim 13, the first optical fiber includes a butt connectable end in the rotational joint of the first optical fiber (Fig 3, ref sign 41a-left end). While the reference does not specifically state "a butt connection", these types of connections are implied since fibers are implied to be in the ferrules 41a to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Claims 2, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193. Regarding claims 2 and 14, Takabashi teaches the limitations of claims 1, 11 and 16 as described above.

However, the reference is silent with respect to an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber/leads and the further optical fiber/lead located proximate the end of the first optical fiber and the end of the further optical fiber/lead or proximate the butt connectable end in the rotational joint or in the butt coupled joint. In other words, adding an index-matched fluid between the end of ferrules 41a and 41b.

Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber and the further optical fiber located proximate the end of the first optical fiber and the end of the further optical fiber or proximate the butt connectable end in the rotational joint.

The motivation is to improve return losses (col 2, lines 17-19). In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193.

Regarding independent claim 15 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling (Fig 3) comprising a first optical lead having a butt connectable end (Fig 3, ref sign 41b, right-end), a first member holding the first optical lead (col 5, lines 1-4 and Fig 3, ref sign 51); a second optical lead having a butt connectable end (Fig 3, ref sign 41a); a second member holding the butt connectable end of the second optical lead (Fig 3, ref sign 49) in rotational relationship with respect to the butt connectable end of the first optical lead (col 5, lines 1-4 and abstract, lines 6-8); the second optical lead having an angle cut end face (Fig 3, ref sign 36) to allow passage of an optical signal through the angle cut end face (col 4, lines 44-48);

While the reference does not specifically state "having a butt connectable end", these types of connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above. The figure shows the ferrules 41a and 41b (and thus fiber) butted up against each other.

However, the reference is silent with respect to a transparent substance extending between the butt connectable end of the first optical lead and the but connectable end of the second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead to thereby inhibit loss of an optical signal therebetween while permitting rotation thereof.

Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include a transparent substance extending between the butt connectable end of the first optical lead and the but connectable end of the

second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead

The motivation is to inhibit loss of an optical signal therebetween while permitting rotation thereof for the purpose of improving return losses (col 2, lines 17-19).

In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 6,702,478 to Inagaki et al. and 4,989,946 to Williams et al. describe coupling fibers that are capable of rotation. U.S. Patent 4,953,951 also to Takahashi shows fibers in the ferrule. In addition, Examiner notes that the Snow reference described above could also be used to reject at least claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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